

**DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING and COMPLIANCE DIVISION
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(MPDES)**

Statement of Basis

Permittee:	City of Libby
Permit No.:	MT0030341
Receiving Water:	City of Libby Stormwater System
Facility Information:	
Name	City of Libby Water Treatment Plant
Location	500 Gilcrease Lane Libby, MT 59923
Facility Contact:	Walt McElmurry, Supervisor P.O. Box 1428 Libby, MT 59923 406-293-2067
Fee Information:	
Number of Outfalls	1 - (for fee determination)
Outfall – Type	001 - Process Water

I. Permit Status

The Montana Pollutant Discharge Elimination System (MPDES) permit for the City of Libby Water Treatment Plant was issued on June 1, 1998 and expired on April 30, 2003. In November 2002, the permittee submitted the associated fees for renewal of the MPDES permit. In September 2004 and August 2006, the City of Libby was asked to submit an application for renewal of the MPDES permit, as no application was available neither in the administrative file nor with the permittee. In September 2006, an application package consisting of EPA Forms 1 and 2A with updated information was submitted to the Department. The application was deemed complete in February 2007.

II. Facility Information

A. Facility Description

The City of Libby Water Treatment Plant (WTP) is a publicly-owned treatment works under the 1987 Office of Management and Budget Standard Industrial Classification Code 4941, "Water Supply". The production of potable water utilizes conventional treatment: settling, coagulation, flocculation, filtration, and disinfection processes to treat raw surface water from Lower Flower Creek Dam Reservoir. The facility is designed to produce four million gallons per day (mgd) of treated potable water at full capacity. Aluminum sulfate was utilized for coagulation and flocculation in the past but the facility discontinued using this chemical in 2001. Instead, a cationic polymer and an anionic filter aid are used in the process (personal communication with Walt McElmurry, April 2007).

Between four and ten percent of the daily produced water flow (reliant on filter efficiencies at the time of year) is filter-to-waste and filter backwash wastewater. Based on the filtrate turbidity, number of hours of use, and head loss across each filter, filters are backwashed for approximately 15 minutes with chlorinated water (finished drinking water) twice a day in the winter and about four times a day in the summer months. Average daily design flow for the wastewater discharge, at full capacity, is 0.173 mgd with a maximum design discharge of 0.40 mgd.

The wastewater is treated by settling in three lined ponds with a combined volume of approximately 1.5 million gallons resulting in at least ten days retention time at the design discharge flow of 0.173 mgd. These wastewaters are intermittently discharged over the day, amounting to a maximum of approximately four hours of total flow out of 24 hours. Currently, discharge flow from the settling ponds is not directly measured. Flow is calculated by using WTP SCADA information regarding filter backwash events, duration, metered filter backwash source water, and the volume of water associated with each clarifier flush event averaged over the reporting period. Current discharge flows are estimated to be an average 0.047 mgd.

The treated wastewater is intermittently discharged from the final settling pond effluent structure to the existing reservoir overflow drain connected to a valve junction box at the

intersection of Main and Balsam Streets (see Figure 1). The flow can then be routed to one of two discharge locations: 1) the currently permitted Outfall 001 to the City of Libby stormwater sewer system that discharges to the Kootenai River from the storm water settling ponds at Dakota Avenue and/or near the wastewater treatment plant, or 2) to Flower Creek at Pioneer Park from a discharge point that has never been used but is still extant.

The Flower Creek discharge option was not permitted as an outfall in the original permit. The permittee indicated during the WTP design phase and initial application for an MPDES discharge permit that they desired to use the stormwater sewer system as the receiving water for the WTP settling pond discharges (Department correspondence April 18, 1996). After Department consideration, it was determined that: 1) as long as the appropriately treated WTP discharge to the stormwater sewer system met specific limits, any resultant discharge to the Kootenai River of WTP discharge water and/or storm water would not exceed water quality standards because of the WTP discharge, and 2) the initial permit would allow discharge only to the stormwater sewer system. The Department indicated that this was to save costs to the permittee. It was also to establish (during the first permit cycle) if the Flower Creek outfall option would need to be used in the event the stormwater sewer system capacity was inadequate to handle the WTP discharge plus storm water (Department correspondence June 16, 1998). There has been no indication from the permittee or during Department inspections that the stormwater sewer system capacity is inadequate to date.

B. Effluent Characteristics

Table 1 summarizes monthly self-monitoring effluent data reported by the City of Libby WTP during the period of record (POR) March 2002 through February 2007.

Table 1. DMR Effluent Characteristics for POR

[illegible]

C. Compliance History

The facility received two violations for exceedences of the 30-day average and instantaneous maximum dissolved aluminum limitations in 1998 and 1999. In 2007, violations of permit were issued for: 1) failure to maintain a copy of the permit on site, 2) failure to maintain permit required records of monitoring information, 3) failure to use and/or follow analytical test procedures approved under Part 136, Title 40 of the Code of Federal Regulations, and 4) failure to develop, implement, and follow adequate laboratory controls and appropriate quality assurance procedures.

II. Rationale for Proposed Technology-Based Effluent Limits (TBELs)

A. Scope and Authority

The Montana Board of Environmental Review (BER) has adopted performance standards for point source discharges to state waters under Title 17, Chapter 30, Subchapter 12 of the Administrative Rules of Montana (ARM). The BER has adopted by reference 40 CFR Subpart N which is a series of federal agency rules that adopt Technology-Based Effluent Limits (TBEL) for existing sources and performance standards for new sources [ARM 17.30.1207(1)]. National Effluent Limit Guidelines (ELG) have not been promulgated under Subchapter N for filter backwash wastewater at potable water treatment plants (WTP).

In addition to Subchapter 12, the BER has adopted general treatment requirements that establish the degree of wastewater treatment required to maintain and restore the quality of state surface waters. This rule states that in addition to federal ELGs, the degree of wastewater treatment is based on the surface water quality standards; the state's nondegradation policy; the quality and flow of the receiving water; the quantity and quality of sewage, industrial wastes and other wastes to be treated; and the presence or absence of other sources of pollution on the watershed [ARM 17.30.635(1)]. Also, ARM 17.30.635(3) states industrial waste must receive, as a minimum, treatment equivalent to the best practicable control technology currently available (BPCTCA) as defined in 40 CFR Chapter 1, Subchapter N (July 1, 1991).

The proposed TBELs for Total Suspended Solids (TSS) and pH are equivalent to secondary treatment standards for municipal domestic wastewater treatment lagoons (40 CFR Part 133.102) and are demonstrated to be consistently achievable in the water treatment industry. These TSS and pH limits are in the previous permit and will be maintained with this permit renewal.

B. Mass-Based Limitations

ARM 17.30.1345(8) requires that all effluent limits be expressed in terms of mass. The following equation was utilized to calculate the mass-based load allocation using the design flow of 0.173 mgd:

Design Flow (mgd) x Concentration Limit (mg/L) x 8.34 (lb·L)/(mg·gal) = Load (lb/day)

TSS:

Average monthly load (lb/day) = (0.173)(30)(8.34) = 43.3 lb/day

Daily maximum load (lb/day) = (0.173)(45)(8.34) = 64.9 lb/day

Table 2. Proposed Final TBELs

Parameter	Concentration (mg/L)		Load (lb/day)	
	Weekly Average ⁽¹⁾	Monthly Average ⁽¹⁾	Weekly Average ⁽¹⁾	Monthly Average ⁽¹⁾
TSS	45	30	69.4	43.3
pH (s.u.)	In the range of 6.0 to 9.0 s.u. (instantaneous maximum)			
(1) See Definition section at end of permit for explanation of terms.				

C. Nondegradation Load Allocations

The provisions of ARM 17.30.701 - 718 (Nondegradation of Water Quality) apply to new or increased sources of pollution [ARM 17.30.702(18)]. Sources that are in compliance with the conditions of their permit and do not exceed the limits established in the permit or determined from a permit issued by the Department prior to April 29, 1993 are not considered new or increased sources.

Nondegradation load allocations for the Libby WTP discharge were calculated for TSS, and dissolved aluminum as part of the permit issuance in 1998, based on the design flow of 0.173 mgd and the proposed permit limitations.

The nondegradation load allocations and the actual average loads discharged from the facility are presented below. Actual loads for TSS and dissolved aluminum were obtained from the facility DMRs. The period of record (POR) is March 2002 through February 2007. These data indicate that the facility did not exceed the nondegradation load values. The Libby WTP discharge is not a new or increased source for the purposes of nondegradation.

Table 3. Nondegradation and Actual Loads for POR

Nondegradation Allocated Load Limits			Actual 30-Day Average Loads					
Parameter	Units	Annual Average Load	2002	2003	2004	2005	2006	2007
Dissolved Aluminum	lb/day	1.44	0.12	0.06	0.02	0.02	0.02	0
TSS	lb/day	43.3	0.39	1.39	1.11	0.30	0.79	1.15

III. Rationale for Proposed Water Quality-Based Effluent Limits (WQBELs)

A. Scope and Authority

Permits are required to include WQBELs when TBELs are not adequate to protect state water quality (ARM 17.30.1344 and 40 CFR 122.44). ARM 17.30.637(2) states that no wastes may be discharged that can reasonably be expected to violate any state water quality standard. Montana water quality standards (ARM 17.30.601, *et seq.*) define both water use classifications for all state waters and numeric and narrative standards that protect those designated uses. New sources or increased sources, as defined in ARM 17.30.703(16), are subject to Montana Nondegradation Policy [75-5-303, Montana Code Annotated (MCA)] and regulations (ARM 17.30.701, *et seq.*).

B. Receiving Water

Wastewater is discharged from the Libby WTP settling ponds to the City of Libby stormwater sewer system. It is subject to further retention in the stormwater sewer system settling basins at Dakota Avenue and/or near the wastewater treatment plant. When runoff and storm events warrant, these ponds discharge to the Kootenai River. The facility was designed so that discharge could be rerouted to Flower Creek, rather than utilize the storm sewers. However, that discharge option has not been permitted and has never been utilized in the history of the facility.

By definition, the stormwater sewer system is a drainage system that receives storm water runoff, snow melt runoff, and surface runoff and drainage, ARM 17.30.1102(23) and 17.30.1102(27). Ephemeral receiving waters are those that flow only in direct response to precipitation in the immediate watershed in response to the melting of a cover of snow and ice and whose channel is always above the local water table, ARM 17.30.602(12). Further, waters that have zero flow or surface expression for more than 270 days during most years are not high quality waters and, as such, the Nondegradation Rules at ARM 17.30.700, *et seq.* do not apply (75-5-303(2)).

C. Applicable Water Quality Standards

ARM 17.30.637(6) states that treatment requirements for discharges to ephemeral streams must be no less than the minimum treatment requirements set forth in ARM 17.30.635(2) and (3). Ephemeral streams are subject to ARM 17.30.635 through 17.30.637, 17.30.640, 17.30.641, 17.30.645, and 17.30.646 but not to the specific water quality standards of ARM 17.30.620 through 17.30.629.

D. Mixing Zone

The previous permit granted the permittee a standard mixing zone of 10 stream widths in the Kootenai River because the discharge volume was so small compared to the volume of the receiving water. However, the actual receiving water is the City of Libby stormwater sewer

system, which is ephemeral by definition, and a mixing zone is inappropriate for this discharge. There will be no mixing zone granted for this permit cycle.

E. Basis and Proposed Water Quality-Based Effluent Limits

In Department correspondence dated April 18, 1996, it was determined that as long as the appropriately treated WTP discharge to the stormwater sewer system met specific limits at the point of discharge, any resultant discharge to the Kootenai River of WTP discharge water and/or storm water combined would not exceed water quality standards because of the WTP discharge. Discharges to Flower Creek shall be considered violations of the permit for discharging at a location other than as authorized by permit.

Even though the receiving waters are defined as ephemeral, the previous permit included WQBELs and monitoring requirements for pollutants typically present in wastewaters discharged by potable water treatment plants that may cause or contribute to a violation of water quality standards. These specifically include the conventional pollutants such as TSS and pH, the non-conventional pollutant turbidity, and such toxics as total residual chlorine and dissolved aluminum. The WQBELs proposed for this permit cycle are the same as those in the previous permit that were based on Department best professional judgment.

ARM 17.30.1345(8) requires that all effluent limits be expressed in terms of mass. The following equation was utilized to calculate the mass-based load allocations for dissolved aluminum using the design flow of 0.173 mgd:

$$\text{Design Flow (mgd)} \times \text{Concentration Limit (mg/L)} \times 8.34 \text{ (lb}\cdot\text{L)/(mg}\cdot\text{gal)} = \text{Load (lb/day)}$$

Dissolved Aluminum:

Average monthly load (lb/day) = (0.173)(1.0)(8.34) = 1.44 lb/day

Daily maximum load (lb/day) = (0.173)(1.5)(8.34) = 2.16 lb/day

IV. Proposed Final Effluent Limits

Outfall 001

Parameter	Units	Average Monthly Limit ⁽¹⁾	Average Weekly Limit ⁽¹⁾	Maximum Daily Limit ⁽¹⁾
Dissolved Aluminum	mg/L	1.0	NA	1.5
	lb/day	1.44	NA	2.16
Total Suspended Solids (TSS)	mg/L	30	45	NA
	lb/day	43.3	69.4	NA
Total Residual Chlorine	mg/L	NA	NA	0.50
Footnotes: NA - Not Applicable				
(1) See Definition section at end of permit for explanation of terms.				

The discharge flow rate shall not exceed 0.40 mgd.

Effluent pH shall remain between 6.0 and 9.0. For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

There shall be no discharge which causes visible oil sheen in the receiving water.

V. Monitoring Requirements

Outfall 001

Self-monitoring of effluent discharged at Outfall 001 shall be conducted at the discharge structure and samples will reflect the volume and nature of the discharge.

Monitoring Requirements				
Parameter	Unit	Monitoring Location	Frequency of Analyses	Sample Type ⁽¹⁾
Flow, Interim	mgd	Effluent	Daily	Calculated ⁽²⁾
Flow, Final	mgd	Effluent	Continuous	⁽³⁾
TSS	mg/L	Effluent	1/Week	Grab
	lb/day	Effluent	1/Month	Calculated
Dissolved Aluminum	mg/L	Effluent	1/Week	Grab
	lb/day	Effluent	1/Month	Calculated
pH	s.u.	Effluent	1/Week	Instantaneous
Total Residual Chlorine	mg/L	Effluent	Daily	Grab
Turbidity	NTU	Effluent	1/Week	Grab
Footnotes: (1) See Definition section at end of permit for explanation of terms. (2) Based on SCADA system data, backwash durations, and clarifier flush volumes averaged over reporting period. (3) Starting July 1, 2010, flow measurement requires recording device or totalizer; permittee shall report daily maximum and 30-day average flow on DMR.				

VI. Nonsignificance Determination

The discharge from the Libby WTP does not constitute a new or increased source of pollutants pursuant to ARM 17.30.702(18).

VII. Special Conditions/Compliance Schedules

- A. The permittee shall install a continuous flow monitoring device (with totalizer or recording capabilities) on the discharge from the settling ponds at Outfall 001. The chosen device shall meet the permit requirements for monitoring flow within ten percent of actual flow being measured. The permit will include interim flow monitoring requirements to allow time for planning, funding, and construction. Final flow monitoring requirements go into effect July 1, 2010.
- B. By June 30, 2008, the permittee will be required to eliminate the discharge option to Flower Creek or to submit an updated application, with the appropriate fees, that includes the Flower Creek outfall as a discharge location.

VIII. Other Information

On September 21, 2000, a U.S. District Judge issued an order stating that until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act are established for a particular water quality limited segment (WQLS), the State is not to issue any new or increased permits under the MPDES program. The order was issued in the lawsuit Friends of the Wild Swan v. U.S. EPA, et al. (CV 97-35-M-DWM), District of Montana and Missoula Division. The DEQ finds that renewal of this permit does not conflict with the order because there are no new or increased sources associated with the discharge.

X. Information Sources

- 1. Administrative Rules of Montana Title 17 Chapter 30 - Water Quality
 - a. Sub-Chapter 2 - Water Quality Permit and Application Fees, November 2003.
 - b. Sub-Chapter 5 - Mixing Zones in Surface and Ground Water, November 2004.
 - c. Sub-Chapter 6 - Montana Surface Water Quality Standards and Procedures, September 2004.
 - d. Sub-Chapter 7- Nondegradation of Water Quality, November 2004.
 - e. Sub-Chapter 10 - Montana Ground Water Pollution Control System, September 2004.
 - f. Sub-Chapter 11 - Storm Water Discharges, April 2004.
 - g. Sub-Chapter 12 - Montana Pollutant Discharge Elimination System (MPDES) Standards, March 2003.
 - h. Sub-Chapter 13 - Montana Pollutant Discharge Elimination System (MPDES) Permits, March 2003.
- 2. Clean Water Act § 303(d), 33 USC 1313(d) Montana List of Waterbodies in Need of Total Maximum Daily Load Development, 1996 and 2006.
- 3. Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1387, October 18, 1972, as amended 1973-1983, 1987, 1988, 1990-1992, 1994, 1995 and 1996.

4. Montana Code Annotated Title 75 - Environmental Protection Chapter 5 - Water Quality, October 2002.
5. Montana Department of Environmental Quality Circular DEQ-2, Design Standards for Wastewater Facilities, September 1999.
6. Montana Department of Environmental Quality Circular DEQ-7, Montana Numeric Water Quality Standards, February 2006.
7. Montana Pollutant Discharge Elimination System (MPDES) Permit Number MT0030431:
 - a. Administrative Record.
 - b. Renewal Application EPA Forms 1 and 2A, 2007.
8. Science Applications International Corporation (SAIC), *Model Permit Package-Water Supply Industry*. EPA Contract Number 68-01-7043, January 1987.
9. US Code of Federal Regulations, 40 CFR Parts 122-125, 130-133, & 136.
10. US Department of the Interior Geological Survey, Statistical Summaries of Streamflow in Montana and Adjacent Areas, Water Years 1900 through 2002, Scientific Investigations Report 2004-5266, 2004.
11. US EPA Technical Support Document for Water Quality-Based Toxics Control, EPA/505/2-30-001, March 1991.
12. US EPA NPDES Permit Writers' Manual, EPA 833-B-96-003, December 1996.
13. US EPA NPDES Permit Writers' Course Manual, EPA-833-B-91-001, April 2003.
14. Washington State NPDES General Permit for Water Treatment Plants –Permit Number WAG-64, Fact Sheet, June 2004.

Completed by MK Valett, April 30, 2007/May 22, 2007

Figure 1.

Flow Schematic for the City of Libby WTP Wastewater

